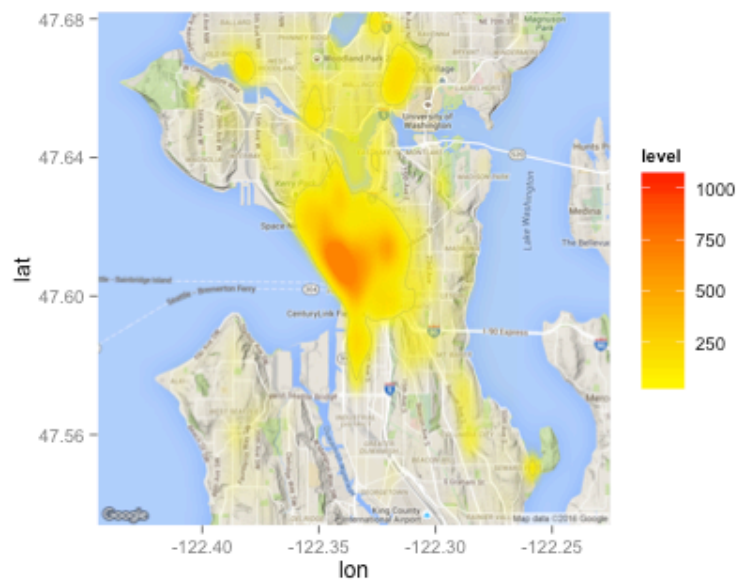# Seattle Car Prowls

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Methods for Data Analysis

City of Seattle has made several efforts to expose various types of city data via open, free APIs. One of the most interesting of these datasets is the Seattle Police Department (SPD) Police Reports dataset, which exposes all initial police reports taken by SPD officers. This dataset provides geographic coordinates for each incident, along with various levels of classification for each crime. Additionally, City of Seattle provides neighborhood boundary shapefiles, which can be combined with the incident repot dataset to determine in which neighborhood crimes occurred. Using these datasets, it is possible to examine crime trends and patterns and develop regression models to analyze past crimes and predict future crimes. Specifically, it is possible to answer questions such as "Which neighborhoods have the most car prowls?", "How many car prowls occurred last year?", "Which months have the most car prowls?", and even "How many car prowls do we predict will occur in 2020?". Since police reports are only released after crimes have been investigated and partial years could affect results, only years 2008 – 2014 are included in the analysis. Analysis of this dataset makes several assumptions, the most important of which is that the dataset contains a record for all crimes that occurred, and that the dataset is complete.
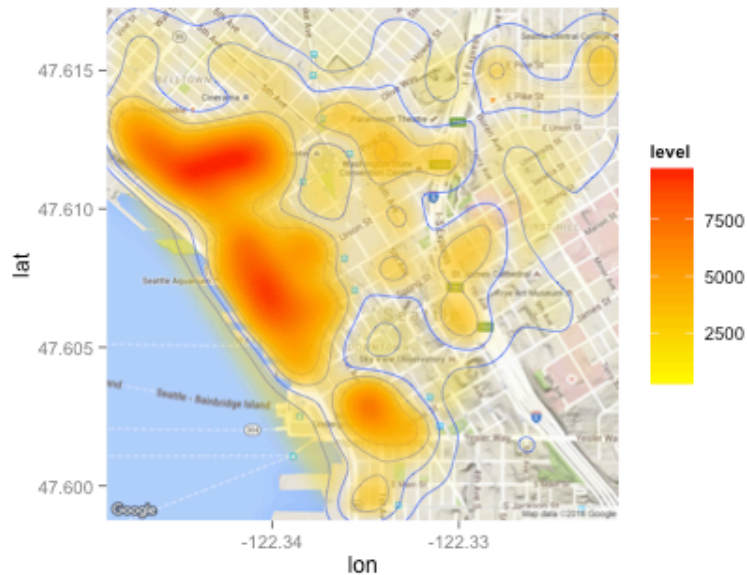
Which neighborhoods have the most car prowls?
By creating a geospatial plot of the data, we can see that the majority of car prowls occur around the downtown area, with some pockets of activity in other neighborhoods

Zooming in, we can see that the majority of car prowls in the downtown area occurred near areas with high tourist activity, specifically around what is classified as the Central Business District, Pike Place Market, and Belltown areas.
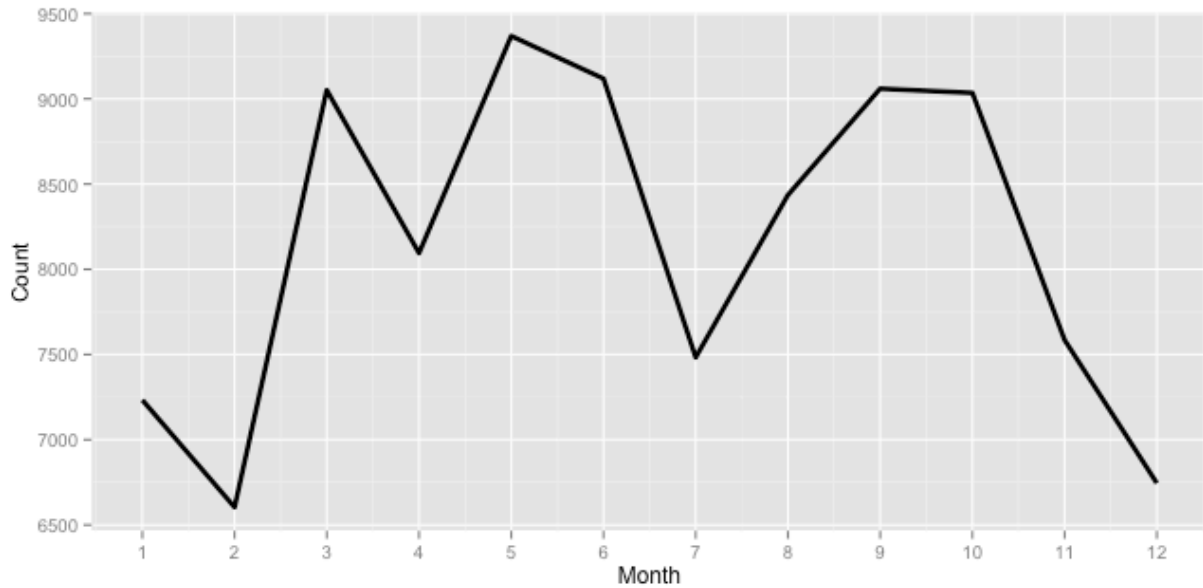

Aggregating the data reveals these neighborhoods indeed have the most car prowls.

NEIGHBORHOOD	COUNT
CENTRAL BUSINESS DISTRICT	6583
BELLTOWN	5153
BROADWAY	4013
FIRST HILL	3456
PIKE-MARKET	3211

When do most car prowls occur?

Aggregating the data by month makes it clear that warmer months have more car prowls than colder months.

Can we predict how many car prowls will occur in the future?

By creating a simple linear regression model, it is possible to analyze the growth of car prowls in Seattle. It is also possible to predict the number of car prowls for a given year in the future.

YEAR	COUNT
2015	23164.14
2016	25461.79
2017	27759.43
2018	30057.07
2019	32354.71
2020	34652.36

By plotting this regression model, we are able to see the trend of car prowl incident growth in Seattle.